



UNITED STATES
 NUCLEAR REGULATORY COMMISSION
 REGION II
 101 MARIETTA STREET, N.W., SUITE 2900
 ATLANTA, GEORGIA 30323-0199

Report No.: 50-261/95-10

Licensee: Carolina Power and Light Company
 P. O. Box 1551
 Raleigh, NC 27602

Docket No.: 50-261

License No.: DPR-23

Facility Name: H. B. Robinson Unit 2

Inspection Conducted: March 27 - 31, 1995

Inspectors: *D. Charles Payne*
 D. Charles Payne, Senior Inspector

4/27/95
 Date Signed

Michael E. Ernstes
 Michael E. Ernstes, Senior Inspector

4/27/95
 Date Signed

Approved by: *Thomas A. Peebles*
 Thomas A. Peebles, Acting Chief
 Operator Licensing Section
 Operations Branch
 Division of Reactor Safety

4/28/95
 Date Signed

SUMMARY

SCOPE:

This routine, announced regional inspection was conducted in the areas of risked based operational safety including control room observation and review of corrective actions taken on previous inspection items. The inspection effort included reviews of activities during non-regular work hours on March 28-30, 1995.

RESULTS:

Risk Based Operational Safety:

Communications were generally formal, and operator demeanor was professional. The Unit Supervisor and the Reactor Operators routinely shared information and system status with one another. However, on several occasions, the Shift Supervisor was made aware of plant status changes but did not pass this information along to the other control room operators. Access to the control room was adequately controlled by the Unit Supervisor. The operators on shift were diligent to their duties and actively monitored their panels.
 (Paragraph 2.a)

In general, plant personnel were knowledgeable of the Probabilistic Risk Analysis process and the vital equipment identified in the Robinson PRA. The control room operators considered the consequences of planned actions given current plant conditions. Maintenance and surveillance activities were planned and scheduled with PRA in mind. PRA and Maintenance Rule training were an ongoing effort at the site. (Paragraph 2.b)

The inspectors evaluated the control room operators' response to Rosemount Nuclear Instrument's report of pressure transmitters that were constructed with out-of-specification materials. The inspectors identified that six operators from two on-shift crews misunderstood that PT-444 and PT-445 (a Pressurizer pressure control channel) were the two affected instruments. Actually, PT-444 and PT-455 (a Reactor Protection System input channel) were the affected instruments installed in the plant. This confusion existed among the on-shift operators for 30 hours before being brought to their attention by the inspectors. (Paragraph 2.c)

The inspectors identified poor communication between the Shift Supervisors and the other control room operators as a weakness. (Paragraphs 2.a and 2.c)

REPORT DETAILS

1. PERSONS CONTACTED

Licensee Employees:

T. Canterbury, Project Engineer/Technical Support
*C. Gray, Manager, Materials & Contract Services
*D. Gudger, Licensing/Regulatory Programs
*W. Hatcher, Manager, Security
*M. Herrell, Manager, Training
*S. Hinnant, Vice President, Robinson Nuclear Plant
S. Laur, Project Engineer/Probabilistic Safety Assessment
N. Johnson, Engineer/Probabilistic Safety Assessment
*K. Jury, Manager, Licensing/Regulatory Programs
*R. Krich, Manager, Regulatory Affairs
B. Meyer, Manager, Operations
*G. Miller, RESS Manager
*R. Moore, Outage Management
*T. Natale, Manager, Operations Training
*V. Smith, Operations Procedures
*B. Steele, Manager, Shift Operations
*R. Warden, Manager, NAS Plant Support
*T. Wilkerson, Manager, E&RC
*D. Young, Plant General Manager

Other licensee employees contacted included operators, training instructors, and office personnel.

NRC Personnel:

*W. Orders, Senior Resident Inspector
C. Ogle, Resident Inspector

*Attended exit interview on March 31, 1995.

Acronyms and initialisms used throughout this report are listed in the last paragraph.

2. Risked Based Operational Safety (93804)

The inspectors evaluated licensee activities to determine if the facility was being operated safely and in conformance with regulatory requirements. Additionally, the inspectors evaluated whether the plant operators were aware of and familiar with risk-based operational safety. These activities were assessed through direct observation, interviews and discussions with licensee personnel, and review of facility records.

- a. Two crews of licensed operators were observed in the main control room for six shifts. The inspectors reviewed shift logs and operating records. The inspectors evaluated the operating staff to determine if they were knowledgeable of plant conditions and results of site

specific risk analyses, responded properly to alarms, adhered to procedures and administrative controls, were cognizant of in-process surveillance and maintenance activities, and were aware of equipment status. Shift activities of particular note observed by the inspectors were on-shift training on 10 CFR 50.65 (Maintenance Rule) and coordination of maintenance on the "A" EDG.

The shift change meetings started promptly and were concise and accurate with the exception of the Rosemount Pressure Transmitter problem discussed below. Communications were generally formal and operator demeanor was professional. The US and the ROs routinely shared information and system status with one another. However, the SS on several occasions was made aware of plant status changes but did not pass this information along to the other control room operators until after they observed changes on their panel indications. For example, during post maintenance testing of the "A" EDG, the SS was told by the EDG operator that he was starting the EDG for testing. However, the RO was not informed of this. He deduced that testing was occurring when lit annunciators became extinguished on his EDG status panel. The inspectors identified poor communications between the SS and the rest of his crew regarding changes in plant status as a weakness.

Access to the control room was adequately controlled by the US. During the shift training activity, the operators on shift were diligent to their duties and actively monitored their panels. Operators were cognizant of the relative risk associated with particular systems and the impact of their manual control manipulations. Attentiveness to control panel annunciators by the ROs was good. However, on one occasion a supervisory panel alarm for the traveling screen backwash system alarmed. This panel was by the US desk and alarms on this panel were routinely acknowledged by the US. The US acknowledged the alarm, informed the two control room ROs, and dispatched the Outside AO to investigate. The US did not follow up on the annunciator nor did the Outside AO inform him that there was a problem with the traveling screen backwash system. Twenty minutes later, while the Outside AO was in the control room to obtain a response procedure, the US was made aware that the traveling screen was in emergency backwash. As the US attempted to have the Outside AO second check a tagout request, he was surprised when the Outside AO asked whether he should stop his response actions for the emergency backwash condition to execute the tagout task. The US was briefed on the status of the backwash system and then directed the Outside AO to continue his actions while another operator was found for the tagout task.

b. Probabilistic Risk Analysis Awareness

The inspectors reviewed the site's implementation of PRA in routine plant activities. The inspectors interviewed licensed operators, training personnel, and supervisors to evaluate their awareness and depth of understanding of PRA analyses performed for H. B. Robinson. Note: Carolina Power & Light connotes these analyses as Probabilistic Safety Assessments. Additionally, the inspectors were briefed by two members of the corporate PSA staff on the recently revised Summary Document for the plant.

In general, plant personnel were knowledgeable of the PSA process and the vital equipment identified by the Robinson PSA. The inspectors observed control room operators consider the consequences of their planned actions given current plant conditions before implementing them. The inspectors noted that maintenance and surveillances were planned and scheduled with PSA as a controlling factor. For example, while "A" EDG was out of service for maintenance, activities on other safety-related equipments were restricted. The only troubling observation the inspectors noted concerned the operator miscommunication associated with the Rosemount Pressure Transmitters (see below). This problem highlighted the fact that, despite extensive operator training and detailed PSAs, if continuous plant configuration is not maintained and understood by the operators, then these efforts can be diminished or even negated.

The inspectors observed on-shift training in the control room on the upcoming implementation of the Maintenance Rule (10 CFR 50.65). In addition to covering the legal aspects of the rule, the operators discussed in detail the PSA implications of rule implementation. The Plant General Manager acknowledged that efforts were continuing to raise and improve staff awareness and use of the PSA results in routine plant activities. The inspectors concluded that present efforts to incorporate the results of PSA into day-to-day operations were adequate.

c. Rosemount Pressure Transmitters

During the site visit, the licensee received a report from RNII regarding a specific model of pressure transmitter that had not been completely manufactured in accordance with design specifications. Robinson had two of these suspect transmitters which were installed for use as PT-444 and PT-455. PT-444 was a control instrument used to provide input to controller PC-444J for pressurizer PORV (PCV-455C), spray valve and heater control operation as well as alarms and indication. PT-455 was a protection instrument used to provide high and low pressurizer pressure signals to RPS and ESF logic circuits as well as input to the Turbine Runback circuit and the Inadequate Core Cooling Monitor.

An operability determination for these two instruments was in process when the inspectors arrived on site. The inspectors noted during the March 28, 1995 morning meeting that plant personnel sometimes confused the nomenclature for the two problem instruments. PT-455 was occasionally referred to as PT-445. PT-445 was a control instrument, similar in function to PT-444, that controls the other pressurizer PORV (PCV-456). Given PT-445 was a control instrument and PT-455 was a protection instrument, it was important that the affected instruments not be confused by the operators on shift. Following up on this observation in the main control room, the inspectors asked both ROs and the US which Rosemount pressure instruments had their operability in question. All three stated, and had recorded in their logs, that PT-444 and PT-445 were the affected transmitters. Upon further questioning by the inspectors, the operators reviewed their logs more closely and noted that the initial log entry (two shifts before) had been "PT-444 & PT-445" but that someone had made a pen and ink correction to change PT-445 to PT-455. The previous shift's log entry still showed "PT-444 & PT-445." This information was used as the basis for the present shift's log entries. With this confusing evidence, the crew was no longer confident which instruments were affected and called the SS to the control area for consultation. When asked, the SS immediately stated that the affected instruments had been, and always were, PT-444 and PT-455 and produced for the inspectors review, a copy of the operability determination request.

The safety impact of this confusion by the on-shift operators was of some significance. The failure mechanism for these instruments, as provided by RNII, could cause them to provide a higher than actual pressure signal when system pressure was decreased sufficiently. The instruments the operators thought had questionable operability were both control channels for Pressurizer PORVs that had isolation block valves. Had RCS pressure decreased in an accident and the instruments failed, the inadvertent PORV actuation could readily be terminated with the block valves. Being unaware that a protection channel, which provided input to low pressure reactor scram logic and low pressure ESF actuation logic, had operability concerns could have resulted in trips and initiations not occurring as expected. Prompt operator action may have been required to protect the plant, yet the operators on-shift were not aware of this impact and responsibility. Once the proper instruments were identified, all operators questioned were cognizant of the potential post-accident complications that may occur and the operator response that may be needed. This failure by the control room licensed operators to effectively communicate and understand plant equipment status is another example of Violation 95-06-01, "Failure To Follow and Inadequate Operations and Maintenance Procedures" as documented in NRC Inspection Report 50-261/95-06 issued April 17, 1995. Consequently, this noncompliance with NRC requirements is not being cited here.

No violations or deviations were identified.

Enclosure

3. Action on Previous Inspection Items (92701)

- a. (Closed) IFI 50-261/93-301-02, "Missing mounting screws on Containment High Range radiation monitors R-32A and B." The inspector verified the screws which were previously missing are now installed. All operators received training on the seismic concerns of keeping these bolts engaged. This item is closed.
- b. (Closed) IFI 50-261/93-301-03, "Ineffective control of operator aids." This item concerned placards outside of the E1/E2 switchgear room which were not under the control of the operator aids program. These items are now tracked under the operator aids program. This item is closed.
- c. (Closed) IFI 50-261/94-01-01, "Lack of alternate path JPMs." This item concerned the small number of alternate path JPMs in the requalification examination bank. The training facility developed several alternate path JPMs. The exam bank now contains 30 alternate path JPMs to be used during the annual operating examinations. Additional alternate path JPMs are planned. This item is closed.
- d. (Closed) IFI 50-261/94-01-04, "Inability to effectively address operator concerns in the procedure change program." This item concerned the slow staff response to operators concerns for procedure change requests. The procedure for handling procedure changes, Plant Operations Guideline-004, "Operations Procedure Reviews," was revised on June 27, 1994. The new revision included guidance on the use of the OPCF form. This form included a block to advise the initiator of the action planned by the Operations Procedure Group. Although the new process prioritizes changes and gives feedback to the initiator, review of the outstanding OPCFs still showed about 1500 OPCFs as outstanding. This item is closed.
- e. (Open) IFI 50-261/94-300-01, "Identification, availability and instructions for breaker operating tools." This item concerned the inability of operators to successfully manually operate 480VAC breakers. Operators were unable to operate breakers due to unavailability of breaker operating tools, inadequate procedural guidance for breaker operation, and lack of knowledge of the function of the OPEN/CLOSE buttons on the breaker cabinet face. The licensee manufactured sufficient tools for breaker operations. The inspector independently verified that the tools were available at the breakers. AOP-029, "Loss of DC Bus A," was replaced with a new procedure, EPP-026. EPP-026 contained diagrams showing the proper operating tool and step by step instructions for operating the breakers. However, the OPEN/CLOSE buttons on the breaker cabinet face, still did not have instructions as to their operation. This item remains open pending further corrective action for instructions on the OPEN/CLOSE buttons on the breaker cabinet face.

- f. (Open) IFI 50-261/94-300-02, "EOP and AOP procedure deficiencies." This item concerned deficiencies in four procedures.
- (1) FRP-J.1, "Response to High Containment Pressure," Revision 04, added steps to check the containment spray pump suction valves as open prior to starting the CS pumps.
 - (2) FRP-H.1, "Response to Loss of Secondary Heat Sink," Revision 08, added a new step (step 8) to provide a method to clear the FWIS while trying to establish a feed path. This step de-energizes safeguards logic. There is a Caution prior to this step which states that SI must be manually initiated. However, the caution does not mention the fact that Phase B will not automatically initiate if needed.
 - (3) AOP-10, "Main Feedwater/Condensate Malfunction," Revision 08, added steps to runback power on a loss of heater drain pump. It also added power limits based on available secondary system equipment.
 - (4) AOP-14, "Component Cooling Water System Malfunction," Revision 05, added steps in applicable sections giving direction for isolating letdown upon a loss of CCW to the non-regenerative heat exchanger. Although the concerns with this procedure were adequately resolved, the inspector observed other inconsistencies. For example, Section A, step 32, gives detailed guidance on how to rotate operation of the charging pumps to prevent losing flow. Section C, step 9, directs the same task but does not give the detailed guidance. Section A, step 31, determined if Charging Pumps should be stopped by checking RCS temperature GREATER THAN 150°F and performing the RNO if not. Section C, step 8, is the same task but checks RCS temperature LESS THAN 150°F and stays in the left hand column when answered yes. The inconsistencies could lead to operator error.

Based on the resolution of the above procedures, the items associated with FRP-J.1 and AOP-10 are closed. The items associated with FRP-H.1 and AOP-14 remain open pending correction of the concerns identified.

- g. (Closed) VIO 50-261/94-300-04, "Failure to ensure operators are properly licensed by part 55 due to improper activation of part 55 licenses," This item concerned inadequate plant tours conducted by operators as part of their license reactivation in accordance with 10 CFR 55.53(f)(2). Operations Management Manual Chapter 37 contained detailed instructions for license activation to ensure activation was in accordance with 10 CFR 55. This item is closed.

4. Exit Interview

At the conclusion of the site visit, the inspectors met with representatives of the plant staff listed in paragraph one to discuss the results of the inspection. The licensee did not identify as proprietary any material provided to, or reviewed by the inspectors. The inspectors further discussed in detail, the inspection findings listed below. The licensee did not express any dissenting comments.

<u>Item Number</u>	<u>STATUS</u>	<u>Description/Reference Paragraph</u>
IFI 93-301-02	Closed	Missing mounting screws on Containment High Range radiation monitors R-32A and B. (Paragraph 3.a)
IFI 93-301-03	Closed	Ineffective control of operator aids. (Paragraph 3.b)
IFI 94-01-01	Closed	Lack of alternate path JPMs. (Paragraph 3.c)
IFI 94-01-04	Closed	Inability to effectively address operator concerns in the procedure change program. (Paragraph 3.d)
IFI 94-300-01	Open	Identification, availability and instructions for breaker operating tools. (Paragraph 3.e)
IFI 94-300-02	Open	EOP and AOP procedure deficiencies. (Paragraph 3.f)
VIO 94-300-04	Closed	Failure to ensure operators are properly licensed by part 55 due to improper activation of part 55 licenses. (Paragraph 3.g)

5. ACRONYMS AND INITIALISMS

AO	Auxiliary Operator
AOP	Abnormal Operating Procedure
CCW	Component Cooling Water
DC	Direct Current
EDG	Emergency Diesel Generator
EPP	Emergency Plan Procedure
ESF	Engineered Safety Feature
FRP	Functional Recovery Procedure
FWIS	Feedwater Isolation Signal

IFI	Inspector Follow-up Item
JPM	Job Performance Measure
OPCF	Operations Procedure Concern Form
PC	Pressure Controller
PCV	Pressure Control Valve
RNII	Rosemount Nuclear Industries, Inc.
PORV	Power Operated Relief Valve
PRA	Probabilistic Risk Analysis
PSA	Probabilistic Safety Assessment
PT	Pressure Transmitter
RCS	Reactor Coolant System
RNO	Response Not Obtained
RO	Reactor Operator
RPS	Reactor Protection System
SI	Safety Injection
SS	Shift Supervisor
US	Unit Supervisor
VAC	Volts Alternating Current
VIO	Violation